REMARKS

In the Final Office Action, the Examiner objected to the specification under 35 U.S.C. §112, first paragraph; rejected to claims 2-4 and 6-7 under 35 U.S.C. § 112, first paragraph; and rejected claims 1-12 under 35 U.S.C. §103(a) as being unpatentable over Coteus et al. (U.S. Patent No. 6,202,110) in view of Wu (U.S. Patent Publication No. 2001/0003198). In addition, the Examiner objected to the Amendment filed on February 12, 2004, as introducing new matter[1].

In the present Amendment, Applicant has amended the specification; amended claims 2-4 and 6-8 to more appropriately define the invention; and added new claims 13 and 14. Support for new claims 13 and 14 can be found, for example, in the description on page 11, lines 15-19 of the originally filed Specification. Upon entry of the Amendment, claims 1-14 remain pending.

Applicant respectfully traverses the Examiner's objection to the Amendment filed on February 12, 2004. In order to expedite prosecution of the present application, however, Applicant has amended the specification in the paragraph beginning at line 7 of page 7 to remove the phrase "by a frequency controller 122 included in memory controller 121", which was added in the February 12 Amendment[2]. Accordingly,

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[1] At page 3 of the Office Action, the Examiner incorrectly identifies February 19, 2003, as the date of Applicant's Amendment. Applicant respectfully notes that the Amendment was filed on February 12, 2004.

[2] Applicant notes that the February 12 Amendment included a proposed change to Fig. 2, but a marked up copy of Fig. 2 was inadvertently omitted from Applicant's response. In any event, in light of Applicant's amendment to the Specification, no changes to the drawings are requested and any previous drawings changes are hereby withdrawn.

Applicant respectfully requests the Examiner to reconsider and withdraw the objection to the Amendment.

Applicant respectfully traverses the Examiner's objection to the Specification and rejection of claims 2-4 and 6-8 under 35 U.S.C. §112, first paragraph. In a further effort to advance prosecution, Applicant has amended claims 2-4 and 6-8, and submits that these claims are adequately supported by Applicant's disclosure.

For example, claim 2, as amended, recites that "the memory controller designates operating frequency of the memory bus", and is thus supported by the originally filed Specification at paragraph 2 on page 7, for example, which states: "to change the designated operating frequency for the memory bus 4 . . . the memory controller 121 selects a desired clock signal that is generated from a clock generator (not shown) for operating the memory bus 4."

Moreover, claims 3 and 6, as amended, recite that "the memory controller designates the specified operating frequency of the slot-type memory module as the operating frequency for both the on-board memory and slot-type memory modules, when the operating frequency of the on-board memory module is higher than the operating frequency of the slot-type memory module", and are thus supported by the originally filed specification at page 11, lines 8-12, for example, which states: "if the operating frequency for the on-board type memory module, i.e. the first memory module 13, is higher than the operating frequency for the slot-type memory modules, the operating frequency for the on-board type memory module is set to [be] the lower

operating frequency of the slot-type memory modules, to allow use of all the memory modules."

Further, claims 4 and 7, as amended, recite that "the memory controller designates the operating frequency of the on-board memory module as the designated operating frequency, when the operating frequency of the on-board memory module is different than the operating frequency of the slot-type memory module", and are thus supported by the originally filed specification at page 10, lines 23-25 which discuss the computer system entering start-up operations using the on-board type memory "[i]f all of the operating frequencies for the respective memory modules are not the same, i.e., some of the operating frequencies are different from each other (Step S106, No)". See also page 10, lines 23-25.

Accordingly, a person skilled in the art would not need any further circuit diagrams or suggestion, nor would any undue experimentation be required, to make or use the subject matter recited in claims 2-4 and 6-7.

In light of the foregoing, Applicant therefore respectfully submits that claims 2-4 and 6-7, as well as the specification, satisfy the requirements of 35 U.S.C. §112, first paragraph. Accordingly, applicant respectfully requests the Examiner to reconsider and withdraw the rejection and objection under 35 U.S.C. §112, first paragraph.

Applicant respectfully traverses the Examiner's rejection of claims 1-12 under 35 U.S.C. § 103(a) as being unpatentable over Coteus et al. in view of Wu because the applied references fail to teach or suggest each and every element of the claimed invention.

In formulating the rejection of claim 1, the Examiner cites col. 4, lines 11-53 in arguing that Coteus et al. teaches "each memory slot coupled in series to the on-board memory modules" (Office Action at page 4). The cited portion of Coteus et al. discusses Fig. 5, which illustrates connector pads 40 for edge connectors 29 and 30. As shown in Fig 2, however, edge connectors 29 and 30 are connected to memory cards 15 which, in turn, have dual in-line memory modules (DIMMs) 31 disposed thereon. Although Fig. 5 illustrates connections between memory cards 15 through connector pads 40, this figure does not show the connections present on memory card 15 itself, and therefore does not disclose connections between individual DIMMs 31 on each card 15. Accordingly, contrary to the assertions set forth in the Office Action, the cited portion of Coteus et al. does not disclose the claimed combination including "each memory slot being coupled in series to the on-board memory module."

Moreover, the Examiner alleges that: "Coteus et al. teach at least board 15 which having an on-board type memory 31 which includes the on-board memory area (i.e., memory slot or bank)", Final Office Action, page 8. Applicants respectfully disagree. Coteus et al. discloses "[s]ixteen DIMMs 31 ... inserted into sixteen edge connectors 33." Dual In-line Memory Module (DIMM) 31, however, are not installed directly on a board (see Col. 3, lines 52-53), and do not constitute an "on-board type memory" (see specification at page 3, lines 7-9). Thus, Coteus et al. fails to teach the claimed "at least one on-board type memory module", and certainly fails to disclose the claimed on-board memory area.

Wu also fails to teach or suggest at least "at least one on-board type memory module" and "an on-board memory area" as recited in claim 1, and the Examiner does not rely on Wu for such teachings.

Claim 9 recites, *inter alla,* "providing an on-board memory area including at least one on-board type memory module, "providing a slot-type memory area including at least one memory slot, each memory slot being coupled to the on-board memory in series", . . . providing a memory controller, coupled in series to the on-board memory" Claim 11 recites, *inter alla,* "[a] method for controlling start-up operation of electronic equipment having an on-board type memory module;" Claim 12 recites, *inter alla,* "an on-board type memory module, . . . [and] a memory controller, coupled in series to the on-board type memory module." Thus, although claims 9, 11 and 12 are different in scope than claim 1, each recites limitations similar to those recited in claim 1. Claims 9, 11 and 12 are therefore distinguishable over Coteus et al. and Wu at least for reasons discussed above in regard to claim 1.

In light of the above described deficiencies of Coteus et al. and Wu, and for reasons set forth in the February 12 Amendment, Applicant submits that claims 1, 9, 11 and 12 are allowable over the applied references. Moreover, claims 2-8 are allowable at least due to their dependency from claim 1, and claim 10 is allowable at least due to its dependency from claim 9.

In view of the foregoing remarks, Applicant respectfully requests the reconsideration and reexamination of this application and the timely allowance of the pending claims 1-14.

Please grant any extensions of time required to enter this response and charge any additional required fees to our Deposit Account No. 06-0916.

Respectfully submitted,

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